



M MECHAN CONTROLS



Product Brochure

O-Type OSSD Safety Switches *with External Device Monitoring*

Machine Safety for People and Productivity

NEW

Connectivity



3, 6 and 10 metre pre-wired cable
5, 8 and 12 pin M12 connector

ODNK
Uniquely
Coded RFID

OHE1
Coded
Magnetic

What are O-Type Safety Switches?

The O-Type range combines 40+ years of experience designing and manufacturing machine guard safety switches with the latest in safety technology. Their unique design means 30 off O-Type switches can be connected in series maintaining PL-e status.

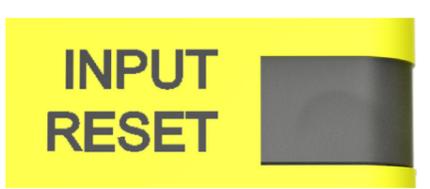
The O-Type switches can be used with a feature called **EDM** (external device monitoring). This means you can monitor the state of contactors or safety relays in order to detect failure of the external device.

LED 1



Displays the status of the OSSD outputs and the power supply.

LED 2



Displays the status of the input from the previous device and the status of the reset circuit (EDM)

3 Operating Faces

Designed to operate at 10mm on ALL guard positions. The ODNK is extremely versatile. The OHE1 will operate at position 3 only.



Fixing



Industry standard 22mm fixing
4 X M4 Security Screws.

IP Rated



Tested and approved to IP67, IP69K suitable for strict wash down environments.

Misalignment indication

The OHE1 has a feature that will show the user if the switch is not aligned correctly.



Features and Benefits



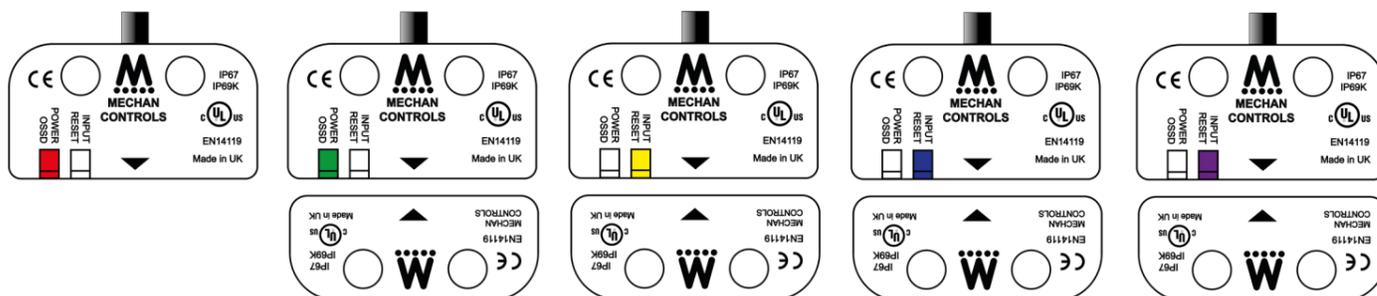
Introduction

The O-Type safety switches have been designed for use on applications where guard-locking is not required. They are available in either uniquely coded RFID or coded magnetic. The dual channel OSSD outputs can be used to reach a safety category of CAT4, SIL3, PL-e in accordance with the latest international safety standards.

Because they have no mechanical parts, they guarantee a long life even in applications with regular operation cycles and tough environmental conditions.

Advanced Diagnostics via LED Indication

O-Type safety switches include two LEDs for indication. They are able to provide visual diagnostics for ALL states of the device.



RED: Displays that there is power to the switch. No actuator present.

Green: Displays that there is power to the switch and the status of the OSSD outputs.

Yellow: Displays the status of the inputs.

Blue: Displays the status of the EDM function. Automatic or manual reset.

Purple: Displays that the switch is in teach mode (17Vdc).

Visible LED Display



The unique LED design means they are visible even when the switch is mounted on the face. Ideal for installations where switch visibility is limited.

Protection Degrees

IP67
IP69K

These devices are designed for use in tough environmental conditions. They offer protection against dust and liquid. Due to the special design, these devices are suitable for use in strict wash down conditions.

RFID Coding



The ODNK unique RFID coding offers protection against manipulation, interference and defeat making them ideal for use in high risk applications. The individual coding allows up to 4 billion possible codes.

Series Connection



The unique self-monitoring technology allows up to 30 O-Type sensors to be connected in series maintaining PL-e in accordance with EN ISO 13849-1.

Technical Specifications



Quality marks:



In compliance with standards:

IEC 61508-1, IEC 61508-2, IEC 61508-3, IEC 61508-4, EN ISO 13849-1, EN ISO 13849-2, EN ISO 14119, EN 62061, EN 60947-5-3, EN 60947-5-2, EN 60947-1, EN 61326-1, EN 61326-3-1, EN 61326-3-2, EN 50581, UL 508, CSA 22.2 No.14

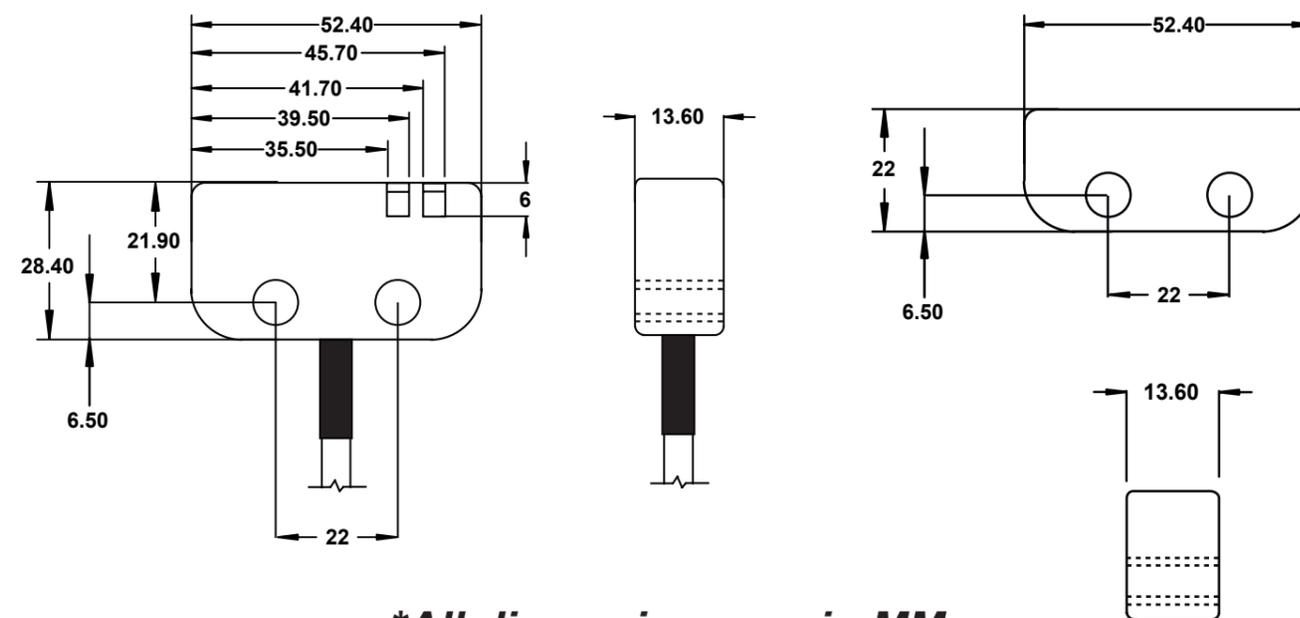
Meets the requirements of:

Machinery Directive 2006/42/EC, EMC Directive 2014/30/EC, Directive 2014/53/EU - RED, RoHS Directive 2011/65/EU

	ODNK	OHE1
Electrical Data of Safety Outputs		
Safety Contact Type	PNP type OSSD	PNP type OSSD
No. of OSSD Inputs	2	2
No. of OSSD Outputs	2	2
OSSD Pulse Width	400 µs	400 µs
Maximum Current per Output	2 A, max.; Status ON (+24V DC)	2 A, max.; Status ON (+24V DC)
Short Circuit Detection	YES	YES
Over Current Protection	YES	YES
Electrical Data of Inputs and EDM		
Operating Voltage	24Vdc	24Vdc
Rated Current Consumption		
Switching time EDM		
Electrical Data of Auxiliary Output		
Operating Voltage	24Vdc	24Vdc
Output Type	PNP	PNP
Maximum Current per Aux Output	2 A, max.; Status ON (+24V DC)	2 A, max.; Status ON (+24V DC)
Short Circuit Detection	YES	YES
Over Current Protection	YES	YES
General Information		
Technology	RFID	Coded Magnetic
Construction	Yellow ABS	Black ABS
IP Rating	IP67 / IP69K	IP67 / IP69K
Operating Temperature	-10°C to +60°C	-10°C to +60°C
Fixing	4 X M4 Security Screws	4 X M4 Security Screws
Connection	Pre-Wired or M12 QD	Pre-Wired or M12 QD
Coding	4 Billion Codes	One Generic Code

Note: For further technical details, please contact Mechan Controls or refer to the O-Type installation manual.

Dimensions



***All dimensions are in MM**

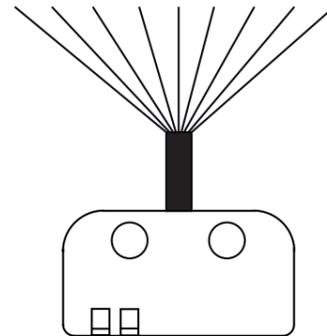
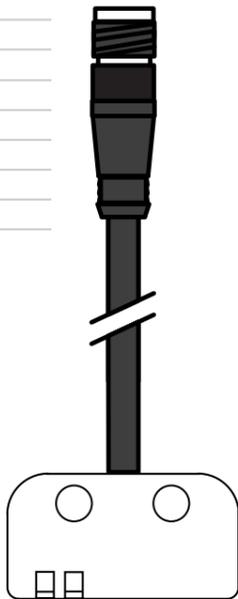


Standard Connection

Connection Information (no EDM)

The standard connection of the O-Type safety switches are available with pre-wired cable or an M12 8-Pole connector on a 150mm lead.

Function	Standard Connection
+24VDC	Brown
0V	Blue
OSSD 1 Output	Grey
OSSD 2 Output	Pink
Auxiliary	White
OSSD 1 Input	Red
OSSD 2 Input	Yellow
A/M Select	Orange (do not connect)
Reset / EDM Input	Green (do not connect)



M12 Single Key Way 8-PIN Connector

PIN	Function	Wire Colour
1	Auxiliary	White
2	+24VDC	Brown
3	NOT USED	Green
4	OSSD 2 Input +24VDC	Yellow
5	OSSD 1 Output	Grey
6	OSSD 2 Output	Pink
7	0Vdc	Blue
8	OSSD 1 Input +24VDC	Red

An O-Type safety sensor has been designed with a safety output rating capable of switching 2Amps. When using the connector version, it is not recommended that you use more than 1Amp.

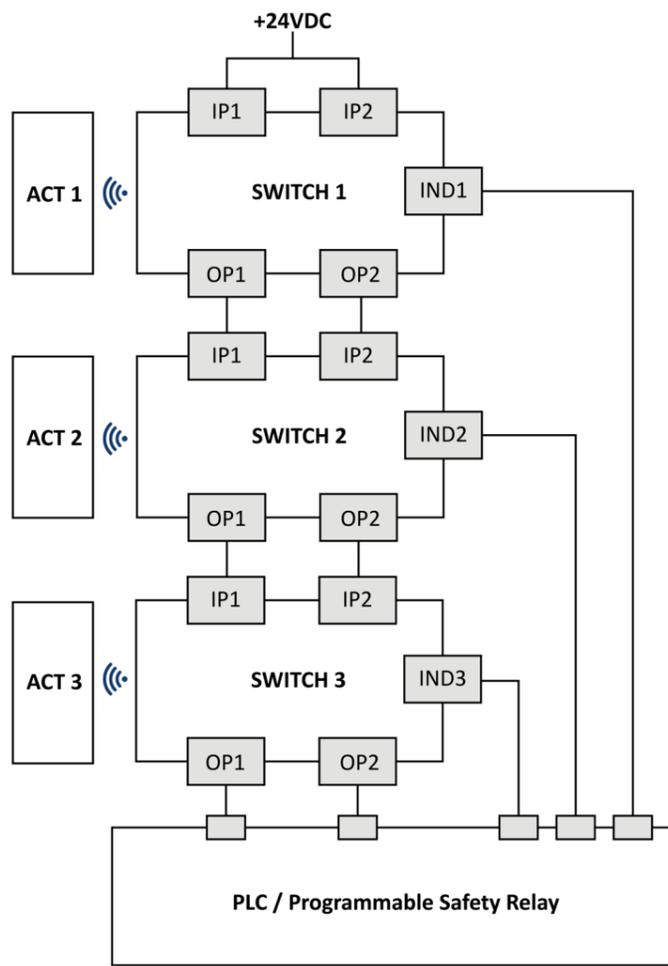
Connection with safety modules

The O-Type can be connected, provided that compatibility is checked, to safety modules or safety PLCs with OSSD inputs.

It is possible to install multiple O-Type sensors in series for simplifying the wiring of the safety system. This can be achieved by connecting the inputs to the positive supply or previous switch and the outputs from the last sensor to interface with a programmable safety relay or PLC.

Depending on the specific requirements of the application, each O-Type switch has a signalling output that can be connected to the PLC or any other device capable indicating the status of the device.

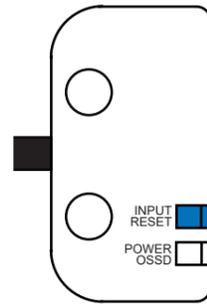
It is possible to connect up to 30 O-Type switches in the below format. If you intend to connect the +24Vdc in series, we do not recommend you use longer than 30 metres of cable due to the voltage drop.



EDM Function

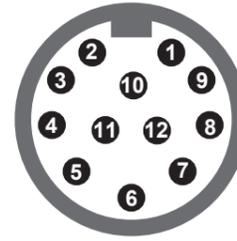
The O-Type switches can be used with a feature called EDM (external device monitoring). This means you can monitor the state of contactors or safety relays in order to detect failure of the external device. The two OSSD outputs from the last sensor are used to monitor the external device, maintaining PL-e according to EN ISO 13849-1.

This solution allows the user to eliminate the need for a safety monitoring device such as a Safety Relay or PLC.



If the switch is configured for monitored reset, the last switch will indicate the status of the reset circuit / external device with a blue LED. Once the system has been reset, the blue LED will turn OFF.

Connection Information



M12 Single Key Way 12-PIN Connector

PIN	Function	Wire Colour
1	Auxiliary	White
2	+24VDC	Brown
3	NOT USED	Green
4	OSSD 2 Input +24VDC	Yellow
5	OSSD 1 Output	Grey
6	OSSD 2 Output	Pink
7	0Vdc	Blue
8	OSSD 1 Input +24VDC	Red
9	Reset / EDM Input	Black
10	A / M Select	Violet
11	NOT USED	Grey / Pink
12	NOT USED	Red / Blue

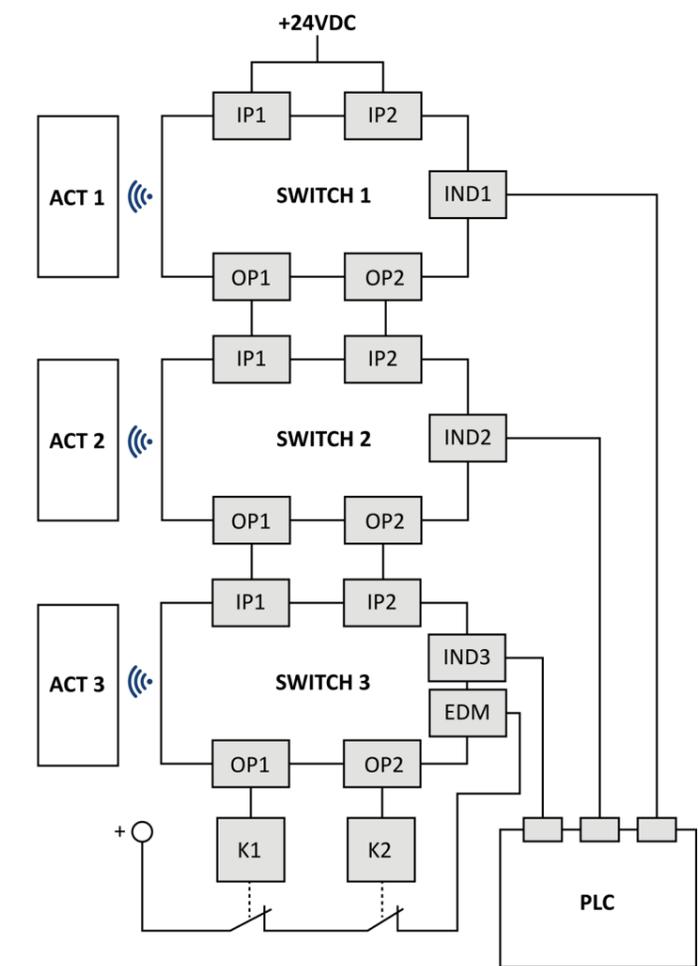
Advanced Connection

Connection Information for pre-wired

Function	Advanced
+24VDC	Brown
0V	Blue
OSSD 1 Output	Grey
OSSD 2 Output	Pink
Auxiliary	White
OSSD 1 Input	Red
OSSD 2 Input	Yellow
A/M Select	Orange
Reset / EDM Input	Green

Orange - Connect to 0v for automatic reset or +24Vdc for monitored reset. Connect to push button if installed in monitored reset configuration or +24Vdc if wired for automatic reset.

Example of three O-Type safety switches connected in series using the EDM function. Switch 3 is monitoring the state of the contactors and is wired in monitored reset to a momentary push button. The auxiliary contacts are connected to a PLC.



Product Selection

Stock Code	Part Description	Inputs	Outputs	EDM	Connection
365.001	OHE1-21-24DC-03M	2	2	NO	03 metre 9-core pre-wired (2-Core not used)
365.002	OHE1-21-24DC-06M	2	2	NO	06 metre 9-core pre-wired (2-Core not used)
365.003	OHE1-21-24DC-10M	2	2	NO	10 metre 9-core pre-wired (2-Core not used)
365.004	OHE1-21-24DC-EDM-03M	2	2	YES	03 metre 9-core pre-wired
365.005	OHE1-21-24DC-EDM-06M	2	2	YES	06 metre 9-core pre-wired
365.006	OHE1-21-24DC-EDM-10M	2	2	YES	10 metre 9-core pre-wired
365.007	OHE1-21-24DC-5LQD	0	2	NO	5-PIN M12 150mm Leaded QD (Male)
365.008	OHE1-21-24DC-8LQD	2	2	NO	8-PIN M12 150mm Leaded QD (Male)
365.009	OHE1-21-24DC-EDM-12LQD	2	2	YES	12-PIN M12 150mm Leaded QD (Male)
365.010	OHE1-ACT	-	-	-	OHE1 Actuator Only
365.011	ODNK-21-24DC-03M	2	2	NO	03 metre 9-core pre-wired (2-Core not used)
365.012	ODNK-21-24DC-06M	2	2	NO	06 metre 9-core pre-wired (2-Core not used)
365.013	ODNK-21-24DC-10M	2	2	NO	10 metre 9-core pre-wired (2-Core not used)
365.014	ODNK-21-24DC-EDM-03M	2	2	YES	03 metre 9-core pre-wired
365.015	ODNK-21-24DC-EDM-06M	2	2	YES	06 metre 9-core pre-wired
365.016	ODNK-21-24DC-EDM-10M	2	2	YES	10 metre 9-core pre-wired
365.017	ODNK-21-24DC-5LQD	0	2	NO	5-PIN M12 150mm Leaded QD (Male)
365.018	ODNK-21-24DC-8LQD	2	2	NO	8-PIN M12 150mm Leaded QD (Male)
365.019	ODNK-21-24DC-EDM-12LQD	2	2	YES	12-PIN M12 150mm Leaded QD (Male)
365.020	ODNK-ACT	-	-	-	ODNK Actuator Only

Cable Accessories

Stock Code	Part Description	Type
	5 Core 1 Key Way M12 5M	05 Metre M12 5-PIN Female Connector
	5 Core 1 Key Way M12 10M	10 Metre M12 5-PIN Female Connector
356.073	8 Core 1 Key Way M12 5M	05 Metre M12 8-PIN Female Connector
356.077	8 Core 1 Key Way M12 10M	10 Metre M12 8-PIN Female Connector
	12 Core 1 Key Way M12 5M	05 Metre M12 12-PIN Female Connector
	12 Core 1 Key Way M12 10M	10 Metre M12 12-PIN Female Connector



About Mechan Controls

Mechan Controls designs and manufactures non-contact safety switches, solenoid locking switches, safety relays and type 4 light curtains for machine guarding applications.

Based in the UK, Mechan Controls produced its first electronic RFID safety switch in 1972, since which time, it has developed an enviable reputation as the industry leader. Today, tens of thousands of applications worldwide attest to the outstanding reliability of Mechan safety switch and safety interlock systems.

M MECHAN
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